Responses to **CEC Data Requests Set One** (30-Day Extension)

Amended Application for Certification for

HYDROGEN ENERGY CALIFORNIA

(08-AFC-8A)

Kern County, California

California Energy Commission

DOCKETED 08-AFC-8A

TN # 67238

Prepared for:

Hydrogen Energy California LLC



Submitted to:



California Energy Commission



U.S Department of Energy

Prepared by:



RESPONSES TO DATA REQUESTS SET 1 (30-DAY EXTENSION) FROM CALIFORNIA ENERGY COMMISSION (CEC)

TABLE OF CONTENTS

CEC DATA REQUESTS

CULTURAL RESOURCES A68

HAZARDOUS MATERIALS MANAGEMENT A93 THROUGH A97

VISUAL RESOURCES A117

LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

ANSI American National Standards Institute

CEC California Energy Commission

DPR Department of Parks and Recreation

HAZOPs Process Hazards Analyses HECA Hydrogen Energy California

ISA Instrumentation, Systems, and Automation Society

PHA Public Health Assessment UPS uninterrupted power supply

Technical Area: Cultural Resources

Authors: Melissa Mourkas, Elizabeth A. Bagwell, Gabriel Roark

BACKGROUND

The Amended AFC and Appendix G-3 identify HECA-2010-2¹ as the foundation and remnant of a "recently demolished farmhouse." The resource is situated within the archaeological resources study area for the proposed railroad spur and natural gas pipeline. HECA-2010-2 consists of a house foundation, clay and cast-iron drainage pipes, polyvinylchloride (PVC) plumbing, and a debris scatter. The archaeological consultant states that the building appears to have been altered more than once during its period of occupancy. To support this statement, the Amended AFC and Appendix G-3 cite the presence of cinderblocks and the clay, cast-iron, and PVC piping at the site. The Amended AFC and Appendix G-3 state that the clay and castiron drainage pipes are part of the original construction of the house. They further state that since "the structure had internal plumbing, as evidenced by sewer pipes (likely connected to a leach field), it is unlikely that an undiscovered 'privy pit' occurs buried in the [archaeological resources study areal." The debris scatter consisted of "sanitary cans, milk cans, ceramic and glass fragments, and various structural debris associated with the building's demolition." (Amended AFC, p. 5.3-29-30, Appendix G-3, pp. 41-42.) Appendix G-4 (Department of Parks and Recreation [DPR] 523 form for MR 5) describes a Quonset hut on the same property as HECA-2010-2 and surmises that this structure was built as a miscellaneous farm structure by the residents of HECA-2010-2. Between the time of HECA-2010-2's recordation on July 29, 2010 and a site update on February 29, 2012, the property on which HECA-2010-2 is situated was graded, resulting in the removal of all surface evidence of the site (Amended AFC, pp. 5.3-30, App. G-3, DPR 523 forms for HECA-2010-2). The Quonset hut was not demolished.

The information provided in the Amended AFC and its appendices concerning HECA-2010-2 does not provide an adequate basis for staff to assess the significance of HECA-2010-2 or potential impacts to the site. As a former rural residence built in the first third of the twentieth century, there is potential for HECA-2010-2 to contain privy and/or refuse pits. Such features, especially a privy pit, would likely be located along the east side of the property so that the prevailing westerly and northwesterly winds would blow unwanted odors away from the residence. Therefore, the proposed natural gas pipeline has the potential to intersect any privy pits that might be present. As stated in the Background to Data Requests 1–2 above, privy and refuse pits frequently contain archaeological materials that qualify archaeological resources for listing in the CRHR. Assessing whether HECA-2010-2 had an associated outhouse requires knowledge of the property's occupational history as well as physical evidence of the sanitation system used at the site. The chronological evidence of occupation must be compared carefully with any technological clues as to sanitation at the site since different sanitation technologies may have been used at different times during occupation of the residence. The documentation of HECA-2010-2 is inadequate for the following reasons:

 Additional documentation of HECA-2010-2 is required to determine whether undiscovered privy and/or refuse pits are located on site in the Project area.

The historic architecture technical report for the proposed project identifies a historic-era structure related to HECA-2010-2 on the property (Amended AFC, App. G-4). This document references the resource as Map Reference No. 5, or MR 5. Throughout this data request document, Energy Commission staff treats HECA-2010-2 and MR 5 as a single resource because of their historical relationship.

• Cursory field methods were used during recordation of HECA-2010-2 relative to the site's potential to contain buried historic archaeological materials.

The Amended AFC and DPR 523 forms contained in Appendix G-3 appear to support the notion that the residence was always on a septic system. However, none of the documentation provided to staff demonstrates that the clay and iron pipes represent the residence's sanitation system and were part of the home's original construction. The documentation does not indicate whether the clay and iron pipes were anchored to the concrete foundation at HECA-2010-2 or were fragments scattered on the site surface. Additionally, the DPR 523 forms for HECA-2010-2 do not include a sketch map (DPR 523K) depicting the location of the clay and iron pipes, among other important features of the site. A sketch map of HECA-2010-2 is an exhibit of first importance in identifying changes to the residence over time, especially given the lack of documentary sources to substantiate the hypothesized alterations to the residence (reference the Background above for discussion of alterations).

The DPR 523 forms and site descriptions contained in the Amended AFC and Appendix G-3 do not quantify the artifacts present at HECA-2010-2, describing the artifacts' location in only the most general sense, and do not estimate the age of artifacts (other than to note the presence of recent specimens as well as historic ones) with reference to standard sources of artifact identification and dating. Such information is essential to the documentation of any historic archaeological site that is being evaluated for significance under CEQA. Chronological information on the artifacts can also supplement the map and documentary evidence of site occupation, possibly filling in the 1912–1932 gap in map coverage for the area.

Finally, the field methods employed to record HECA-2010-2 were cursory, relative to the site's potential for containing a privy pit or buried refuse pit. The archaeological consultant conducted a surface inspection (50–65 feet between surveyors) of the site and scraped back vegetation in 8-inch-by-8-inch squares where ground surface visibility was deemed poor (Amended AFC, p. 5.3-21, 5.3-22; App. G-3, p. 33). Although such methods would identify refuse or privy pits that are visible at the ground surface, such features are frequently buried—surface inspection alone would not locate such buried archaeological features. Use of a metal detector to identify concentrations of metal artifacts and a metal probe to verify the presence of metal and other artifacts are invaluable for the identification of relatively shallow buried features and are standard professional protocol on historic archaeological sites of this kind (California Department of Transportation 2008:6:24; HARD Work Camps Team 2007:86).

References

California Department of Transportation, 2008. *Environmental Handbook, Volume 2: Cultural Resources*. October. Sacramento, California. Electronic document, http://www.dot.ca.gov/ser/vol2/ch_6/Ch_6_Oct_08.pdf, accessed June 25, 2012.

Governor's Office of Planning and Research, 1999. CEQA and Archaeological Resources.
Appendix 6 in Ronald E. Bass, Albert I. Herson, and Kenneth M. Bogdan, *CEQA Deskbook*.
Point Arena, CA: Solano Books. Originally published April 1994 in *CEQA Technical Advice Series*, Governor's Office of Planning and Research, Sacramento, California.

HARD Work Camps Group, 2007. Work Camps: Historic Context and Archaeological Research Design. Draft. June. Prepared for Cultural Studies Office, Division of Environmental Analysis, California Department of Transportation, Sacramento, California. Electronic document, http://sonoma.edu/asc/publications/HARD/Work%20Camps_Research%20Design Draft2 web.pdf, accessed June 25, 2012.

DATA REQUEST

- A68. Please revise and submit the DPR 523 forms for HECA-2010-2 to include the following information:
 - a. The number of artifacts observed at HECA-2010-2, any specific age assignments that can be made to individual specimens or classes of artifacts, and the distribution of artifacts at the site.
 - b. A DPR 523k Sketch Map of HECA-2010-2 that depicts the site boundary, location of all site features, artifact concentrations, and the location of any plumbing present at the site.
 - c. The revised DPR 523 form should represent site conditions at the time of recordation in 2010.

RESPONSE

- a. The Department of Parks and Recreation (DPR) 523 forms for HECA-2010-2 have been revised to include cultural constituents that are predominantly comprised of demolished structural remains, including various chunks of concrete, timber, and wiring. Although there is a sparse scatter of historic artifacts (sanitary cans, milk cans, and metal and glass fragments), it is thoroughly mixed with the structural remains and modern habitation debris (various food and beverage containers, and miscellaneous clothing).
 - The DPR forms are submitted separately to the California Energy Commission (CEC) under rules of confidentiality.
- b. An updated sketch map depicting Feature 1, the area of maximum artifact density, and the location of a 4–inch cast-iron interior wastewater pipe are included in the DPR forms, submitted separately to CEC under rules of confidentiality.
- c. The revised DPR forms, submitted separately to CEC under rules of confidentiality, describe the conditions of the site at the time of its original recordation in 2010.

Technical Area: Hazardous Materials Management

Author: Dr. Alvin Greenberg

BACKGROUND

The project would store up to 3.8 million gallons of anhydrous ammonia (NH₃) in two double-walled vertical steel storage tanks. The Off-site Consequence Analysis (OCA) conducted by the applicant claims that a "worst-case" release would involve the release of the entire contents of one tank into the space between the inner and outer walls such that ammonia would be released from the Pressure Relief Valve (PRV) on the outer tank over one hour. While the analysis of this scenario is informative, it does not represent a "worst-case" release. Given the extraordinary volume of anhydrous ammonia that will be stored on site, staff believes that the catastrophic failure of the piping and/or valves through which anhydrous ammonia flows into and out of a storage tank is a much more plausible event that would result in greater impact and should be analyzed.

DATA REQUEST

- A93. Please identify the piping and valves through which anhydrous ammonia will flow into and out of the storage tanks and conduct an OCA of at least two scenarios:
 - a. a horizontal jet release from a pipe where the contents of one tank empty in one hour, and
 - b. an instantaneous "egg shell" release from a pipe where the contents of the tank empty in the shortest reasonable time given the diameter of the pipe (a matter of minutes).

RESPONSE

The Applicant requires an additional 30 days to respond to this Data Request.

BACKGROUND

The proposed facility consists of highly complex chemical processes that include many different types of reactor vessels, storage vessels, treatment units, piping, valves, and flanges as well as the following facilities which would, if considered separately, each constitute a highly complex stand-alone industrial plant.

- A coal/petcoke gasification plant.
- An Air Separation Unit producing cryogenic materials (a maximum of 1200 tons of liquid oxygen and 100 tons of liquid nitrogen stored at any one time).
- A syngas scrubber, sour shift, low-temperature gas cooling, sour water treatment facility.
- A mercury removal unit.
- An acid gas removal (Rectisol process) unit.
- An ammonia synthesis unit that produces and stores up to a maximum of 3.8 million gallons of anhydrous ammonia.
- A urea unit.
- A urea pastillation unit.
- A urea pastille handling and transfer unit.
- A urea ammonium nitrate complex that produces nitric acid, ammonium nitrate, and urea.
- A sulfur recovery unit that includes the storage of up to 1.4 million pounds (700 tons) of liquid sulfur at any one time at an unknown temperature.

In addition to these processes, several additional hazardous materials will be used and stored in very large volumes on the site to support various processes. These include sodium hydroxide (60,000 gallons of 5-50 percent concentration), sodium hypochlorite (7,000 gallons of unknown concentration), 2,000 gallons of diesel fuel, gasoline during construction (4,000 gallon), 300,000 gallons of methanol in a storage tank plus an additional 250,000 gallons within the process vessels, and about 6,000 pounds per year of activated carbon containing unknown amounts of mercury removed from the syngas downstream of the sour shift/low-temperature gas cooling unit and stored on-site as waste for an unknown period of time until transported offsite to a Class III hazardous waste facility.

Fugitive emissions and leak detection methods were not completely or clearly described in the Amended Application for Certification for each of the processes itemized above. Also, the potential for accidental releases of hazardous materials exists and any history of accidental releases at similar gasification facilities would be helpful to staff in its analysis. Staff needs this information in order to fully and completely assess the risk of hazardous materials use to workers and the public.

DATA REQUEST

A94. In tabular format by process, please provide a description of all leak detection methods, both stationary and portable, the chemicals that would be detected (syngas, hydrogen gas, hydrogen sulfide, ammonia, etc.), the frequency of detection unless continuous monitoring is employed, and facility response to detected leaks (e.g., automatic valve closure, manual valve closure, secondary detection, initiating the Emergency Response Plan, etc.).

RESPONSE

It is the intention of the Project to provide early-warning detection systems for all the chemicals that could pose a risk to the onsite workers and the surrounding environment. This type of detailed design is typically done at a later stage; thus, a selection of the types of stationary and portable leak detection equipment has not been made. The primary leak-detection methodology for the Project is described in the response to Data Request A95.

The HECA Project hazardous gas detection and warning system will include the following chemicals:

- 1. Hydrogen sulfide
- 2. Carbon monoxide
- 3. Carbon dioxide
- 4. Ammonia
- 5. Hydrogen
- 6. Methanol
- 7. Propylene
- 8. Natural gas (Methane).

It is the intention of the Project to select and install a continuously monitoring system for chemical detection, as per industry standards. All items mentioned in the Data Request for facility response to detected leaks (automatic valve closure, secondary detection, emergency response mechanisms, and other techniques) will be considered for installation during the detail design phase of the Project, following a comprehensive analysis. Hydrogen Energy California (HECA) will select the best possible combination of measures to ensure protection of onsite workers, and the surrounding community and environment.

The Project will also include extensive secondary containment to comply with spill prevention and fire prevention regulations and insurance requirements. This secondary containment for storage tanks and process areas provides an opportunity for visual leak detection and an early warning to limit the extent of the potential release. Level indicators and switches for storage tanks and other equipment will also be a means to prevent/detect leaks and loss of contents.

Discussions with local first response agencies are just beginning, and a facility Emergency Response Plan will be available at a later stage.

DATA REQUEST

A95. In tabular format by process, please provide a description of the type, location, detection limits, and whether they are wired to an Uninterruptable Power Supply (UPS) of all permanent hard-wired hazmat sensors and the chemicals they are able to detect.

RESPONSE

The hazardous and flammable gas detection system will be specified and fully designed during detailed engineering, following completion of the facility Process Hazard Analyses (HAZOPs). It is the intention of the Project to provide early-warning detection systems for all the chemicals that pose a risk to the onsite workers and the surrounding environment. At this stage of the Project, a selection of the type, location, and detection limits of the equipment has not been made. However, the remaining section of the response describes the approach that HECA will take to design, install, and plan an effective detection and warning system for the Project.

The HECA Project hazardous gas detection and warning system will focus on the chemicals in the plant that have potential for personal injury and/or asset/environmental damage. The detection system will include the following chemicals:

- 1. Hydrogen sulfide
- 2. Carbon monoxide
- 3. Carbon dioxide
- 4. Ammonia
- 5. Hydrogen
- 6. Methanol
- 7. Propylene
- 8. Natural gas (Methane).

Detector locations will be based on proximity to hazardous material inventories, and the potential adverse impacts of accidental leaks to operating personnel, the general public, and facility assets, including:

- storage areas
- loading/unloading stations
- pipelines
- large rotating equipment handling hazardous materials (e.g., pumps and compressors)
- selective fence-line locations, if appropriate.

The detectors will be set to detect and annunciate (visual and audible) at an appropriate concentration, based on human health effects or lower flammability limit concentrations for the particular constituent of concern. The detectors will be connected to the uninterruptable power system (UPS), or some other highly reliable power source, where feasible; and will activate local and remote alarms and emergency response and protection systems. Typical systems include emergency isolation valves, emergency equipment and/or process unit shutdown, and water sprays or fogging for hazardous gases or fire suppression.

The hazardous and flammable gas detection system will be designed and operated in the accordance with the appropriate industry standards, and codes may include:

- American National Standards Institute/Instrumentation, Systems, and Automation Society (ANSI/ISA)-92.00.01, Standard and Performance Requirements for Toxic Gas Detection Instruments
- ANSI/ISA-92.00.02, Installation, Operation and Maintenance of Hydrogen Sulfide Detection Instruments
- ANSI/ISA-12.13, Performance Requirements, Combustible Gas Detectors
- National Fire Protection Act 72, Fire Alarms

The actual gas detection standards and codes used for the HECA Project will depend on the insurance underwriter requirements, local safety regulations and ordinances, and owner preferences.

DATA REQUEST

A96. Please provide any known hazardous materials accidental release history at similar facilities that utilize the same or similar chemical or engineering processes.

RESPONSE

The Applicant requires an additional 30 days to respond to this Data Request.

BACKGROUND

The project owner stated at the June 20, 2012 workshop that the project may ship off-site some of the 3.8 million gallons of anhydrous ammonia stored on-site in two tanks. In order to properly asses the impacts of the transfer of anhydrous ammonia to tanker trucks and/or rail cars, staff will need additional information about the transfer facility. An Off-site Consequence Analysis (OCA) conducted by the applicant is also needed.

DATA REQUEST

A97. Please provide a schematic diagram of the anhydrous ammonia transfer facility showing the piping and valves through which anhydrous ammonia will flow out of the storage tanks, secondary containment should a spill occur during transfer operations, the location, type, and detection limits of ammonia sensors, and conduct an OCA of the worst-case accidental release during transfer to tanker trucks and rail cars.

RESPONSE

The Applicant requires an additional 30 days to respond to this Data Request.

Technical Area: Visual Resources

Author: Elliott Lum

BACKGROUND

According to the Amended Application for Certification (AFC) for the HECA project, both the visual impact susceptibility and visual impact severity from Key Observation Point (KOP) No. 1 have been characterized as high (see Table 5.11-1 and 5.11-4, respectively). As such, the aesthetic impact significance has been classified as significant.

To mitigate this impact to a level of less than significant, the amended AFC recommends a conceptual landscaping plan for screening purposes (see Mitigation Measure VRMM-1). The plan will include information on the plant species proposed; their size, quantity, and spacing at planting; their expected heights at 5 years and at maturity; and their expected growth rates.

However, the visual resources section of the amended AFC does not include the above plan or visual simulations that Energy Commission staff requires to address the adequacy of the Mitigation Measure VRMM-1. Staff has concluded that additional project information is necessary before a significance conclusion can be reached for the impact at KOP 1.

DATA REQUEST

- A117. Please provide an electronic copy of a conceptual landscaping plan for review by staff. The primary purpose of the plan is to show how landscaping at the project site will contribute to screening views to the maximum extent feasible for the view from KOP 1. Consistency with applicable sections of Chapter 19.86, Landscaping, of the Kern County Zoning Ordinance is required.² To ensure that the information provided in the on-site landscaping plan will allow for a thorough assessment of this impact, the plan will need to include these elements, as well as those listed below, at a minimum:
 - a. Information on the type of plant species proposed: size, quantity, and spacing at planting; expected height at 5 years and maturity; and expected growth rates. Staff requires preparation of this information by a qualified professional arborist or botanist familiar with local growing conditions.
 - b. Electronic and paper copies of 11-inch by 17-inch color photographic simulations at life size scale showing the landscaping 5 years after planting and at maturity from the viewpoint for KOP 1.

RESPONSE

The Applicant met with County representatives on August 23, 2012, to discuss the applicable sections of Chapter 19.86, Landscaping, of the Kern County Zoning Ordinance. Based on these discussions, the Applicant is currently preparing a landscaping plan that will be shared with the CEC following County approval, anticipated by the end of October.

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² See http://www.co.kern.ca.us/planning/pdfs/KCZODec11.pdf.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

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AMENDED APPLICATION FOR CERTIFICATION FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A (Revised 8/28/12)

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DECLARATION OF SERVICE

I, <u>Dale Shileikis</u>, declare that on <u>September 21</u>, 2012, I served and filed a copy of the attached <u>Responses to CEC Data Requests Set One (30-Day Extension)</u>, dated <u>September</u>, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner: (Check all that Apply)

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Attn: Docket No. 08-AFC-08A 1516 Ninth Street, MS-4 Sacramento, CA 95814-5512 docket@energy.ca.gov

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission Michael J. Levy, Chief Counsel 1516 Ninth Street MS-14 Sacramento, CA 95814 michael.levy@energy.ca.gov

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Alaka